Designing a Telescope Proposal

Joe Callingham (ASTRON)

Kenyan Radio Astronomy School,
Nairobi, Kenya
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DEVELOPMENT IN AFRICA WITH RADIO ASTRONOMY

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Step 1: Identify Sources

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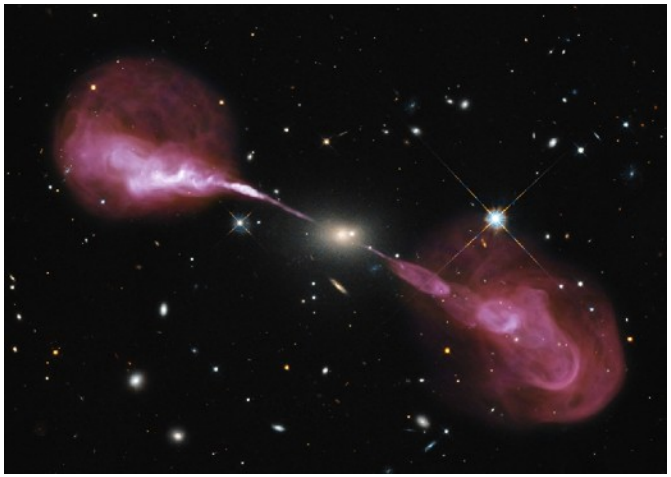
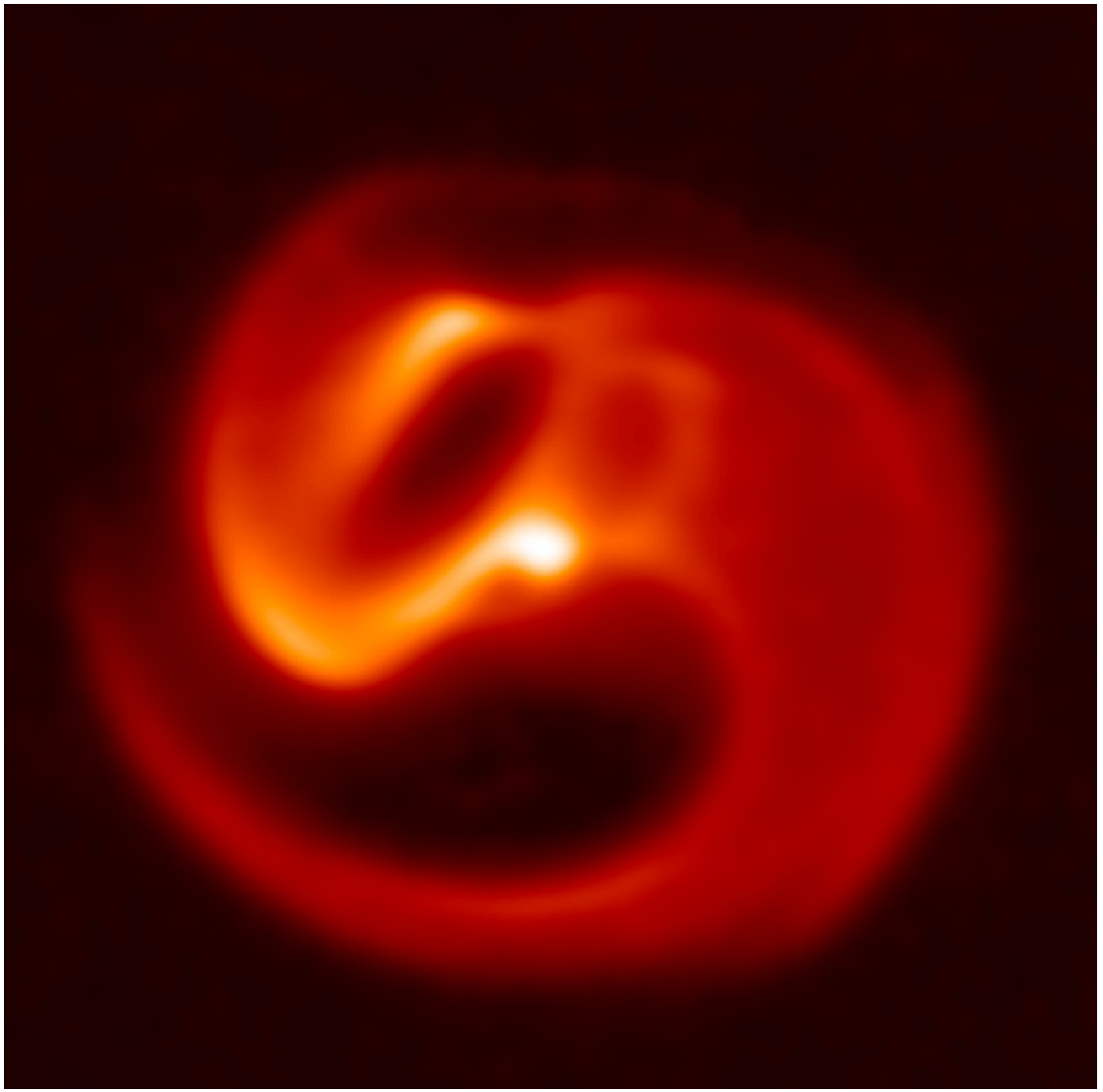
› You have your favorite source(s) or population





Step 2: Identify Question

- What do you want to know about your favourite source(s) or population?
- This should attempt to solve a physical problem.
- E.g. My model predicts that this source is undergoing evolution, so we predict at frequency X there should be this type of structure. If we find that, it provies the model correct.
- It can also be a community output (e.g. calibration solutions or new imaging techniques for the community).

Step 3: Identify a telescope to answer that question

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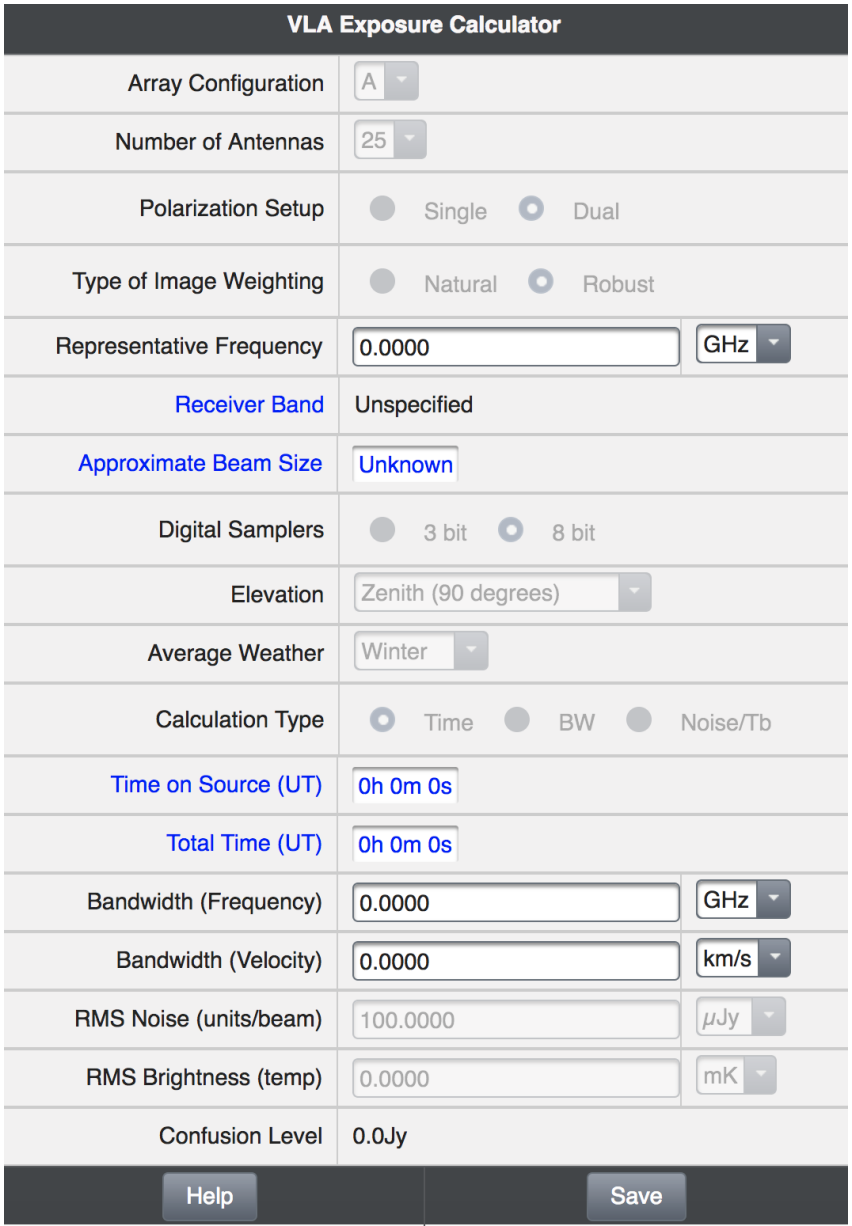
› Do you need spectral resolution? Do you want high angular resolution? Do you need to observe over a wide-field of view?

Step 4: Work out how much time you need to do this

- Each telescope has observing tools to work this out (sensitivity calculators). Some work based on rms required and others on total time
- Depends if spectral line or continuum or VLBI
- Has to be realistic or you are applying for large programs (if you start exceeding ~3 days of observing on radio telescopes, you are entering large program world)



Step 5: Write a compelling proposal

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› What makes a compelling proposal is in the eye of the beholder somewhat

› TACs are used to assess, so bias should be limited (or entrenched?)

› Best practice to writing a proposal in my view:
  - Make the question you are trying to solve so obvious it hurts
  - Best if question impacts broadly (particularly around hot science topics)
  - Stress the key role the telescope you are applying at is the only (or close to it) telescope that can solve this
  - (sometimes) conclude with potential prospects if science is successful

"I haven't read your proposal yet, but I already have some great ideas on how to improve it!"

The reverse order…

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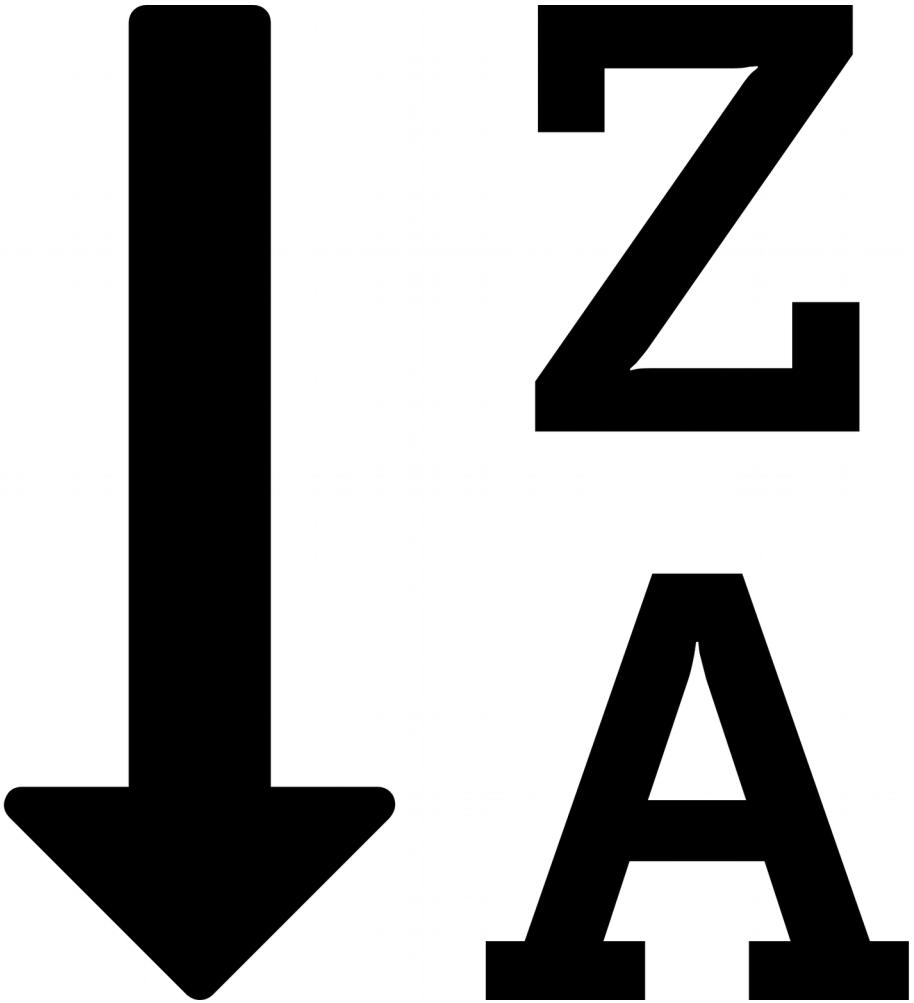
› In truth, a lot of astronomers work in the reverse order (step 3 to 1) – keeping in mind their favourite source



Conclusions and tips

- There are many ways to write telescope proposals, and you get better with practice
- The science goal and technical capabilities of the telescope must go hand in hand
- Make the question you are trying to answer VERY obvious throughout
- Compelling abstract is key… but hard.